

SEVERE LOCAL STORMS

[Compiled by MARY O. SOUDER from reports submitted by Weather Bureau officials]

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the United States Meteorological Yearbook]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Miami, Fla., 8 or 10 miles west.	1	4:15 p. m.		0	\$1,500	Tornado	Building unroofed and south wall collapsed. Roof damage to several other buildings. Path from west-southwest to east-northeast. The funnel was never seen to reach the ground.
Montana, north-central counties.	1				342,000	Severe hail	Crop loss, \$335,000; property damage, \$7,000.
Lincoln, Nebr.	2	8-10 p. m.	15		2,000	Thundersquall	Property damaged.
Albuquerque, N. Mex.	2	9-10 p. m.	13		10,000	Electrical and heavy rain.	Streets washed, some basements flooded.
Waco, Nebr.	2	P. m.	12		1,000	Wind and hail	Property damaged.
Wichita, Kans.	3	3:07-4:45 p. m.	115		25,000	Thundersqualls	Property damaged; path 30 miles long.
Kremmln, Okla., 3 miles south.	3	5:10 p. m.	11 1/2		2,500	Straight-line wind.	Property damaged; slight crop loss; path 3 miles long.
Greenburg, Kans.	3	6 p. m.	880		15,000	Heavy hail.	Property damaged; path 1 1/4 miles long.
Longdale, Okla., vicinity of.	3	do.				Straight-line wind.	Farmhouse demolished; other property damaged.
Polk and Mahanomen Counties, Minn.	3	8:30-10:30 p. m.	11		15,000	Thundersqualls and hail.	Barn and garage wrecked; several barns and outbuildings moved from their foundations, partly unroofed or otherwise damaged. Trees uprooted; corn lodged. Crop loss from hail, \$9,000, in Mahanomen County; in Polk County, \$1,000; path 30 miles long.
Altona, Okla.	3	8:45 p. m.				Straight-line wind.	Garage and several farm buildings demolished; other buildings damaged.
New Boston, Ill.	3				21,000	Wind	Loss to crops, \$2,000; property damage, \$1,000.
Brown County, S. Dak.	4	2 p. m.	15			Wind and hail.	Loss in poultry and livestock; growing crops total loss in places.
Day County, S. Dak.	4	2:15 p. m.	16-8		150,000	Heavy hail and high wind.	Property damage, \$50,000; crop loss, \$100,000.
Do.	4	2:30 p. m.	17		9,000	do.	Property damage; loss in crops.
Castlewood, S. Dak., and vicinity.	4	4:15 p. m.	11		12,000	High wind.	Church blown over; 2 barns and small sheds wrecked; some trees uprooted; grain shocks down.
Hand County, S. Dak.	4	4:30 p. m.	14		11,000	Wind, rain and hail.	Farm buildings and machinery wrecked; flock of 120 young turkeys killed; crop loss heavy, but not estimated.
Wagner, S. Dak., vicinity of.	4	4:40-5:30 p. m.	100		15,000	High wind and dust.	Property damaged; minor crop loss.
Geddes, S. Dak., vicinity of.	4	4:45-6 p. m.			1,000	High wind.	Property damaged.
Loyal, Okla., 1/4 mile north.	5	6:30 p. m.	440-880	0	15,000	Small tornado and hail.	Storm moved from northwest to southeast. Damage to buildings; a church demolished; path 3 1/4 miles long.
Inola, Okla., 4 miles west.	5		200	0	2,200	Small tornado.	Property damage on 1 farm; path 333 yards long.
Winchester, Va., 4 miles east.	5					Tornadoic wind.	School building demolished.
Alabama.	6				1,000	Tropical storm.	The storm moved inland into Louisiana, caused strong winds and high tide on the coast with small damage in Alabama.
Knoxville, Tenn.	6				5,000	Thunderstorm.	Property damaged.
Louisiana, extreme southern portions.	6-7				200,000	Tropical hurricane.	Principal loss to crops, \$200,000. Additional unknown losses to trapping interests, because of the drowning of a part of the muskrats, not estimated. Not included in this estimate are the greater damage from floods in southwestern Louisiana attending and following heavy rains of August. 6-9 and losses to crops and property damage including livestock.
Two Buttes, Colo.	7	3 p. m.	17		75,000	Heavy hail.	There were 2 separate storms.
Cimarron County, Okla.	7	6-7 p. m.			45,000	2 hailstorms.	The first storm occurred over a strip 9 by 16 miles west of Boise City, the area affected being 7 miles wide and about 15 miles long, while the other storm was 3 to 6 miles east of Boise City with a path 3 miles wide and nearly 15 miles long. Loss to crops.
Solano, N. Mex., vicinity of.	9	4 p. m.	14		1,000	Heavy hail.	Loss to crops.
Lincoln and Frontier Counties, Nebr.	9	4-9 p. m.	16		100,000	Hail, wind, and heavy rain.	Hail, heavy and long continued, denuded about 125 sections of land and was the principal cause of damage. Some damage to buildings and trees by wind and to fields from flooding.
Thomas County, Kans.	9	6:30-7 p. m.	15		10,000	Heavy hail.	Chief loss in grain sorghums; some property damage; path 25 miles long.
Campobello and Paolet, S. C.	10	Early afternoon.		0	2,000	Tornadoes.	Property damaged.
South Carolina, coastal area from Charleston southward.	11	2:30 p. m.		34		Hurricane.	Property damage along the South Carolina southern coast was heavy, especially severe at Folly Beach, near Charleston, Edisto Island Beach and City and County of Beaufort, including U.S. Marine Corps base on Parris Island and Town of Port Royal where water front buildings, communication and power lines were wrecked, many trees uprooted and high tides flooded streets and ground floors of buildings. Over 200 houses in Beaufort County totally wrecked and over 1,000 damaged. This reported to be the worst storm since 1893.
Augusta, Ga.	11-12				\$228,500	High wind and heavy hail.	Damage in Augusta and vicinity, \$1,500. Loss to canal gates estimated at about \$225,000.
Savannah, Ga.	11-12			2	850,000	High wind and heavy rain.	During this subtropical hurricane, wind reached a velocity of 73 miles per hour, with the lowest barometer reading on record. Property damaged.
Leon, Iowa, 17 miles north-west.	12	P. m.				Rain and flood.	Grand River overflowed. Many fields flooded; some highways under water.
Belvidere to Cherry Valley, Ill.	12				60,000	Hail.	Crop loss, \$50,000; property damage, \$10,000.
Des Moines, Mitchellville, and Colfax, Iowa.	13	10:20 a. m.				Wind and heavy rain.	Streets, stores, basements, and electric conduits flooded causing interruption of electric and trolley service. Traffic delayed as water rose to running boards of cars. Electric wires and poles blown down in Des Moines and between Des Moines and Polk City. Highways and fields flooded between Colfax and Mitchellville.
Tucson, Ariz., vicinity of.	13	P. m.		1	125,000	Heavy rain and flood.	Excessive rain in eastern Pima, Santa Cruz, and southeastern Cochise Counties, caused much damage. A flash flood in the vicinity of Tucson flooded parts of the city and disrupted power service. Tangible property loss estimated at \$75,000, with resulting loss in business of \$50,000.

1 Miles instead of yards.

SEVERE LOCAL STORMS—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Greensboro, N. C., 15 miles southeast.	14	5:20 a. m.	100	0		Tornado.	On 1 farm 3 tobacco barns were destroyed, 1 full of tobacco for curing. Storm moved north-northeastward; path 2 miles long.
Rutland, Ill.	14				\$2,200	Hail.	Crop loss, \$2,000; property damage, \$200.
Manchester, Iowa, and vicinity.	14					Electrical.	Barn struck by lightning. A threshing crew had taken refuge in the building and 13 men and 17 horses were stunned by the bolt, but without serious injury. 2 houses struck by lightning with considerable damages.
Drysville and Lattinville, Iowa, and vicinities.	14-15	P. m.		1	8,500	Rain and flood.	Several hundred acres of farmland and 3 city blocks flooded; about 40 homes affected. Highways covered with water and several hundred feet of railroad track washed out. Loss to crops, \$3,500; property damage, \$6,000.
Virginia.	14-18				1,430,500	Floods.	Floods of the James, Meherrin, Roanoke, and Blackwater Rivers caused \$860,000 damage to highways and bridges, about \$565,000 to crops and material which was not movable, and around \$5,500 to livestock.
Raymond, S. Dak., vicinity of.	15	4-6 p. m.	' 1		10,000	High wind.	10 farm buildings and garage wrecked; other buildings damaged; minor crop loss; path $8\frac{1}{2}$ miles long.
Traverse County, Minn.	15	P. m.			10,000	Thundersqualls and hail.	Several silos and small buildings wrecked. Loss to growing crops, \$9,000; property damage, \$1,000.
Seneca to Thedford, Nebr.	16	1:30-3:30 p. m.	' 1-2		3,000	Hail and excessive rain.	Hail severe, but over grassland; principal damage by flooding.
Chouteau, Mont.	16	4 p. m.			600	Wind.	Damage to shocked grain; granary and fence destroyed.
St. Vrain, N. Mex., vicinity of.	16	9 p. m.	' 1		7,000	Heavy hail.	Loss to crops.
Vanderburg County, Ind.	16				3,200	Wind.	Several greenhouses and garage damaged.
Hill City, Kans., south of.	23	7:30 p. m.	' 3		2,000	Wind and hail.	Property damaged; path 10 miles long.
Chamberlain, S. Dak., and vicinity.	23	7:30-8:30 p. m.			13,000	High wind and heavy rain.	Electric lines, 3,000 feet of railroad trackage, and highway a mile east of Chamberlain damaged. Basements flooded. Property damage, \$10,000; crop loss, \$3,000.
Andover, S. Dak., $7\frac{1}{2}$ miles north.	23	9:50 p. m.		0	53,000	Tornado.	Path narrow and from northwest to southeast with buildings scattered to northwest to southeast of path. About 50 small buildings damaged; some livestock and poultry killed. Property damage, \$50,000; crop loss, \$3,000.
Hill City, Kans., 8 miles northeast.	23	P. m.		0	4,500	do.	Damage to buildings on 1 farm where large barn was completely destroyed; small buildings damaged.
Verdel, Nebr., 4 miles northwest.	23	do.	' 3		3,000	Hail and heavy rain.	Hail damage, \$1,000; flood damage to bridges and fields about \$2,000.
Mitchell, S. Dak., and vicinity.	24	8 p. m.	100		5,000	Wind, rain, and hail.	Brick farm building wrecked, others damaged. Telephone poles down; trees stripped of foliage; 1 person slightly injured. Property damage, \$3,000; crop loss, \$2,000.
Mesa, Colo., and vicinity.	25	7:30 p. m.			800	Heavy hail.	Storm severe on 4 ranches; loss to fruit and truck.
Kiowa, Colo.	25	P. m.	' 1-2		4,000		Large hailstones; property damaged.
Cumberland, Md.	25				8,000	Heavy rain.	Property damaged.
Geneseo, Kans., 3 miles south.	26	9:40 a. m.	' 1		3,000	Tornadoic wind.	Damage to farm property; path 3 miles long.
Scott City, Kans., north of.	26	5-5:30 p. m.	' 1		8,000	Heavy hail.	Hailstones accumulated 6 to 7 inches deep on the level. Property damage; loss to crops; path 3 miles long.
Anthony, Kans., vicinity of.	26	8 p. m.	33	0	3,000	Small tornado.	Tornado occurred in connection with general thunderstorm conditions and struck barn and outbuildings of a farm 8 miles west and 1 mile north of Anthony.
Blackstone, Ill.	26				6,000	Wind.	Property damage, \$3,500; crop loss, \$2,500.
Bradford, Ill.	26				2,300	do.	Crop loss, \$1,500; property damage, \$500.
Carlinville, Ill.	27				1,500	Electrical.	Barn burned.
Decatur, Ill.	27				2,500	Wind.	Property damaged.
Ogallala, Nebr.	28	6 p. m.	' 12		1,000	Wind and hail.	Property damaged; loss in livestock.
Tulsa, Okla.	28	1:15-1:27 p. m.	' 11		10,000	Hail.	Property damaged; path 2 miles long.
Kent County, Del.	31	P. m.		1	50,000	Heavy thunderstorm and flood.	Lake Como overflowed, washing out 2 bridges on the Du Pont Highway and parts of the Pennsylvania Railroad roadbed. A telephone lineman drowned.
Frederick County, Md.	31				75,000-100,000	Heavy thunderstorms.	Storm caused streams, already swollen from daily rains for a week to overflow their banks. Carroll Creek which flows southward through Frederick, reached an unprecedented crest and overflowed its banks and retaining walls for the first time in history. Merchandise in warehouses and stores damaged. Water reached to the tops of automobiles on municipal parking lot and entered many cellars. A concrete bridge and a trestle washed out.

SOLAR RADIATION AND SUNSPOT DATA FOR AUGUST 1940

SOLAR RADIATION OBSERVATIONS

By HELEN CULLINANE

Measurements of solar radiant energy received at the surface of the earth are made at nine stations maintained by the Weather Bureau, and at 10 cooperating stations maintained by other institutions. The intensity of the total radiation from sun and sky on a horizontal surface

is continuously recorded (from sunrise to sunset) at all these stations by self-registering instruments; pyrheliometric measurements of the intensity of direct solar radiation at normal incidence are made at frequent intervals on clear days at three Weather Bureau stations (Washington, D. C., Madison, Wis., Lincoln, Nebr.) and at the Blue Hill Observatory at Harvard University. Occasional observations of sky polarization are taken at the Weather Bureau stations at Washington and Madison.